

Amendments to the Specification

Please replace page 10, lines 12-26, with the following:

“Fluorescent Markers for Spatial Analysis

As shown in **Fig. 9B**, in one embodiment of the system, the present invention includes a population of multicellular organisms having a plurality of spatially distinct, optically detectable, phenotypic characteristics 40 and an instrument for detecting such characteristics. According to the present invention, a spatially distinct, optically detectable, phenotypic characteristics 40 includes a marker pattern 42 of spatially consistent features that can be used to orient the organism along its major axis. The spatially distinct, optically detectable, phenotypic characteristics 40 may also include a second feature that is modifiable or inducible when the population is subjected to a test treatment. Test treatments include exposure to a chemical compound (e.g., a chemical compound from a complex chemical compound library), a harsh environment (e.g., starvation, increased temperature, decreased temperature, overcrowding, changes in light, etc.), a mutagenesis procedure (e.g., exposure to a known chemical mutagen), a genetic crossing procedure (e.g., where two strains of organisms are crossed to determine how particular phenotypic traits or biochemical pathways interact), etc.

Amendments to the Drawing

Applicant has added a new drawing sheet which replaces **Figure 9B**, an illustration of a multicellular organism in one aspect, with a plurality of spatially distinct, optically detectable, and phenotypic characteristics and a marker pattern. Applicant respectfully submits that the amendments to the Drawing does not add new matter.